2022-2023

Survey Report on Developers

in China

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In March 2023，Over 10,000 Chinese developers told us how they learn and level up，which tools they 're using, what is their salary, and what they want.

I.Basic Profile of Developers

We categorize developers into three groups based on age range and present the following characteristics after analyzing each group's features:

Developers aged under 30(71%)

Gender: Male 87%

Education background: Bachelor's degree or above 81%

Geographical distribution: Tier-1 cities 41%

Current position:

Position	%
Backend developer	31%
Frontend developer	14%
Full-stack developer	9%
Embedded application or device developer	6%
Academic researcher	5%
Operations and maintenance engineer	4%
Data or business analyst	4%
Testing (QA) developer	4%
Data scientist or machine learning expert	2%
Desktop or enterprise application developer	2%

Industry: Internet/software/IT manufacturing 78%

Internet 47% software 28% IT manufacturing 3%

Developers aged 30-40(22%)

Gender: Male 94%

Education background: Bachelor's degree or above 88%

Geographical distribution: Tier-1 cities 42%

Current position:

Position	%
Backend developer	19%
Technical manager	9%
Full-stack developer	9%
Architect	8%
Embedded application or device developer	7%
Operations and maintenance engineer	6%
Data or business analyst	4%
Desktop or enterprise application developer	4%
Frontend developer	3%
Product manager	3%

Industry: Internet/software/IT manufacturing 71%

Internet 46% software 21% IT manufacturing 4%

Developers aged above 40(7%)

Gender: Male 96%

Education background: Bachelor's degree or above 85%

Geographical distribution: Tier-1 cities 33%

Current position:

Position	%
Technical manager	12%
Architect	11%
Full-stack developer	8%
Operations and maintenance engineer	7%
Senior executive (top-level management, vice president, etc.)	7%
Backend developer	6%
Embedded application or device developer	6%
Product manager	5%
Academic researcher	5%
Desktop or enterprise application developer	4%

Industry: Internet/software/IT manufacturing 59%
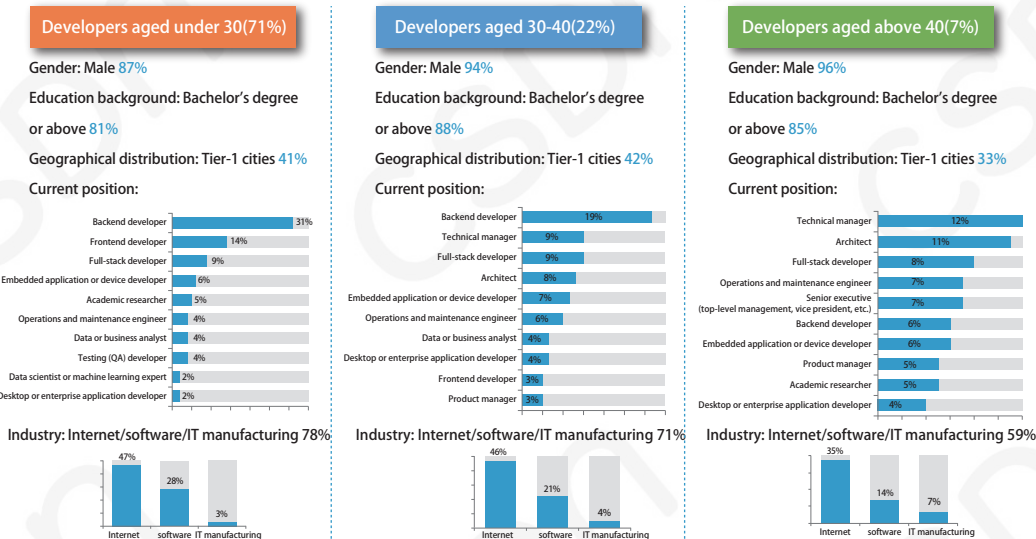
Internet 35% software 14% IT manufacturing 7%

Figure 1 Basic characteristics of the developers

- Developers aged under 30 account for 71% of the total, and more than 40% of developers work in Tier-1 cities nationwide (mainly in Beijing, Shanghai, Guangzhou, and Sheen). Developers with the Bachelor's degree or above account for 80% of the total, and 89% of developers are male.

- Almost half of the developers work in the software industry in China.

- The highest proportion of developers work on backend development, while developers aged above 40 mainly hold positions as technical managers and architects.
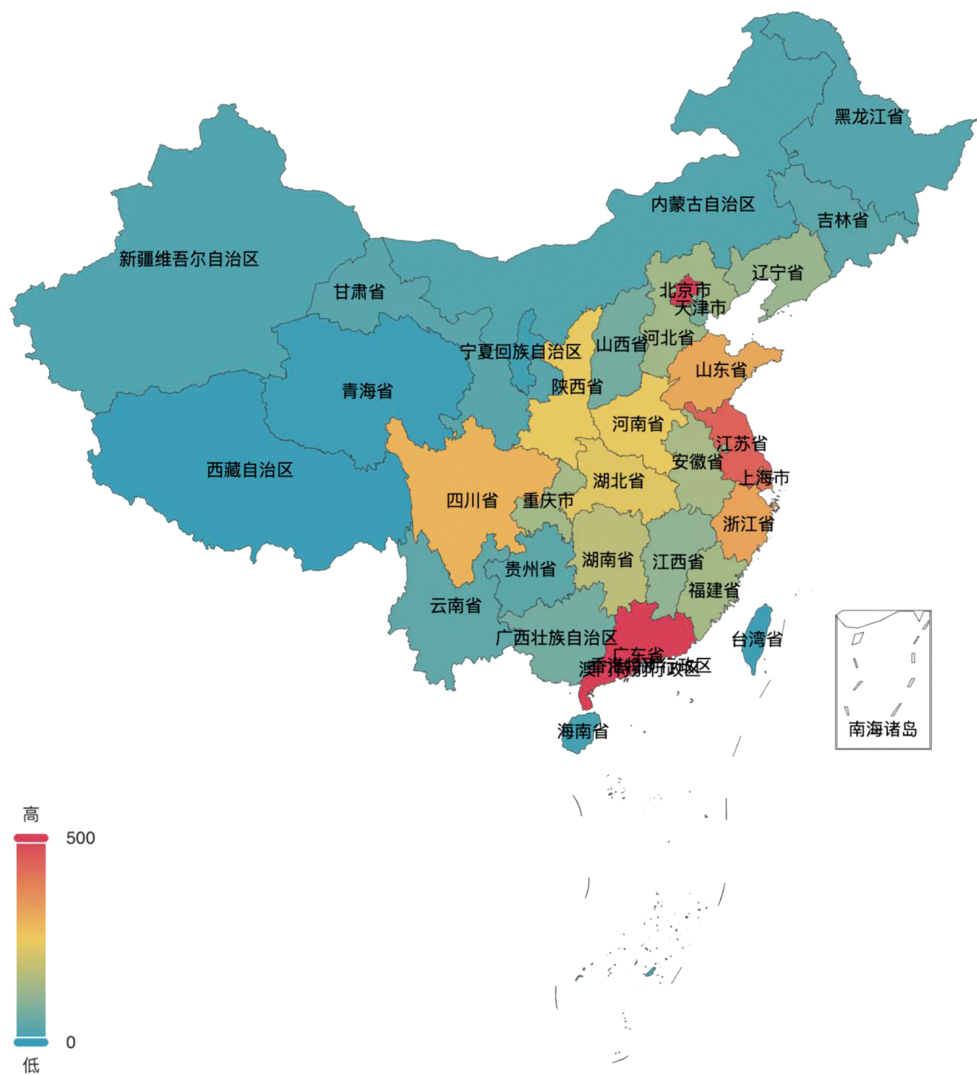
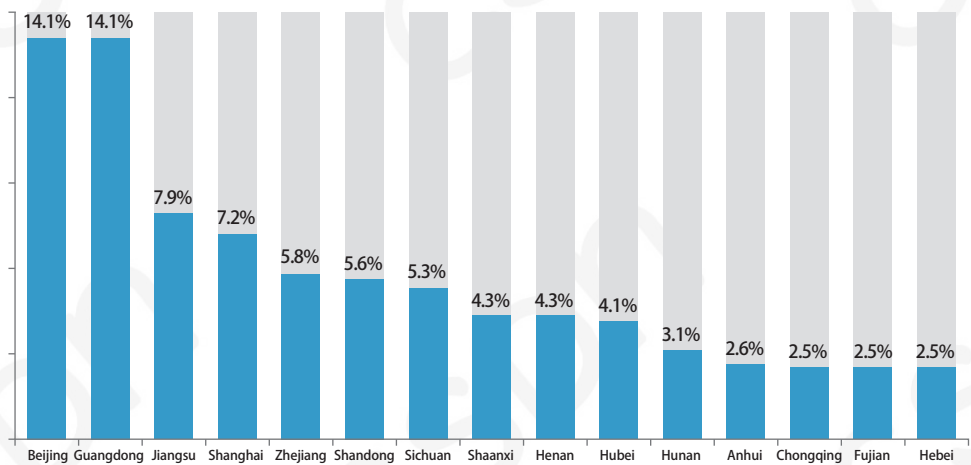Figure 2 Geographical distribution of developers

Figure 3 Top 15 regions where the developers are distributed
(province, autonomous regions, municipalities and special administrative regions)

Beijing and Guangdong are regions with a relatively high concentration of developers, accounting for 28.2% of the national total. Shanghai and Jiangsu are in the second tier, accounting for 15.1% of the national total.

II. Analysis of Developer Salary Status

Compared to the data from 2021, developers' income has decreased this year. The proportion of developers with a salary below 5000 yuan has increased from 5.5% in 2021 to 13.7%, while the proportion of developers earning between 8000 to 17000 yuan per month has decreased from 49.2% last year to 40.2%. The proportion of developers earning more than 30,000 yuan per month has slightly increased to 8.1%.
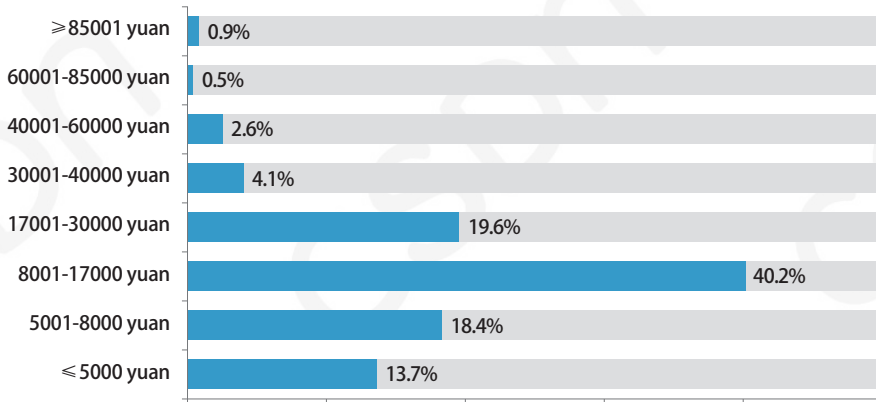
Figure 4 Distribution of developer monthly salary

According to statistics, in the past year, 43% of developers stated that their salary remained unchanged, and 6% of developers experienced negative growth. Only 51% of developers reported an increase in salary in the past year, compared to 62% in 2021.
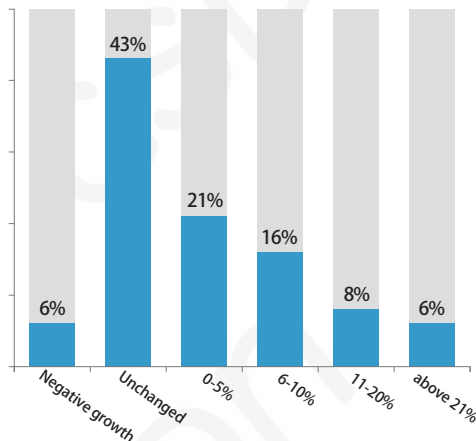
Figure 5 Developer monthly salary growth

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Among developers with a monthly salary above 17,000 yuan, nearly 30% work in Beijing, which has decreased slightly compared to last year but still far exceeds that of other regions. The proportion of developers with a monthly salary above 17,000 yuan in Guangdong and Shanghai is 19% and 14%, respectively.
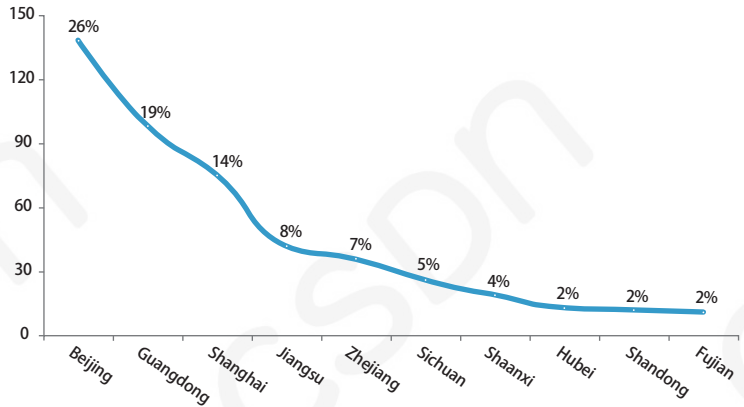
Figure 6   Top 10 regions with the highest proportion of developers
earning a monthly salary above 17,000 yuan

Data shows that among the top 10 regions with the highest number of developers earning a monthly salary above 17,000 yuan, nearly half of the developers working in Beijing and Shanghai have a salary above 17,000 yuan, while in other regions, the proportion is only around 30%.
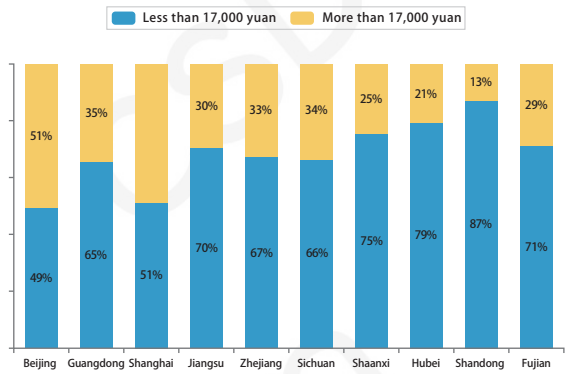
Figure 7   Proportion of developers earning a monthly salary
above 17,000 yuan in each region

There also exists a certain difference in salaries between male and female developers. In the monthly salary range above 17,000 yuan, the proportion of male developers is 31%, while female developers account for only 16%. However, in the salary range of 8,000 to 17,000 yuan, the proportion of female developers is slightly higher than that of male developers.

Figure 8 Proportion of male and female developers in different monthly salary ranges

Education level is also an important factor affecting salary levels. From the data, it can be learned that among developers with higher education, the proportion of high-income groups is relatively higher. Among developers with a master's or doctoral degree, over 50% of them earn a monthly salary of over 17,000 yuan.
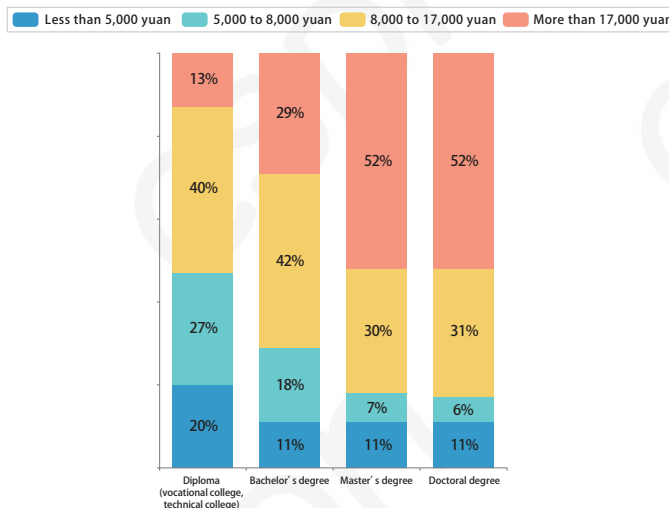
Figure 9 Salary distribution of developers of different educational background

According to the data, the impact of the epidemic on freelancers is relatively significant. The proportion of freelancers with an income exceeding 17,000 yuan has dropped from 24% last year to 16%. Among developers who work more than 55 hours but less than 72 hours per week, 50% of them have an income exceeding 17,000 yuan.
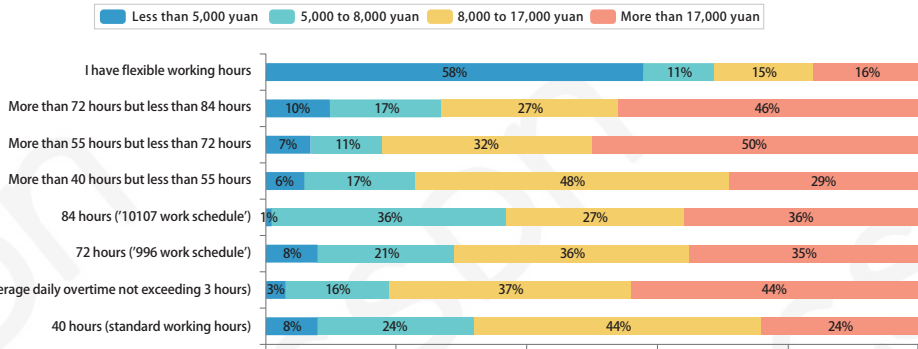
Figure 10 Salary distribution of developers working different hours per week

Developers' salaries increase with years of working experience. Among developers with 11-15 years of working experience, 67% have a salary of over 17,000 yuan per month, while among those with less than 1 year of working experience, only 10% have a salary of over 17,000 yuan per month.
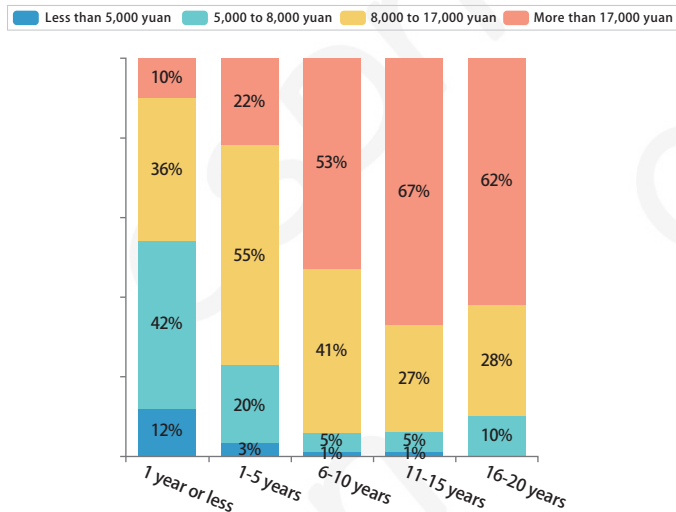
Figure 11 Salary distribution by years of working experience among developers

In 2022, the telecommunications equipment manufacturing industry had the highest proportion of high-income developers, with nearly 80% of developers earning more than 8,000 yuan per month.
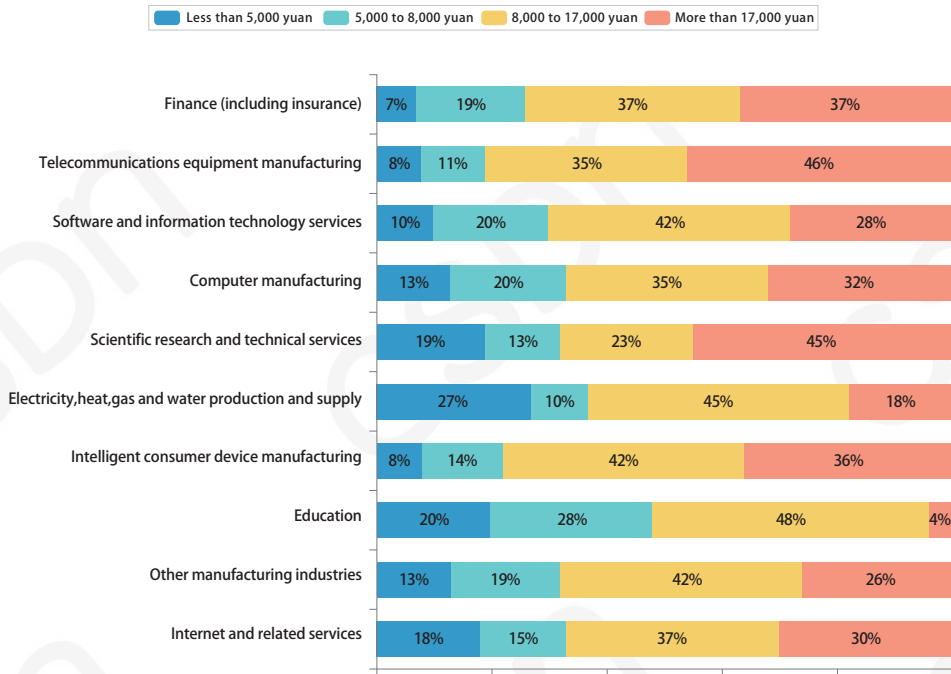
Figure 12 Distribution of salaries of developers in different industries

III. Basic Analysis of Developer Work

From an external perspective, IT industry personnel seem to have a high turnover rate. However, with the overall employment situation shrinking in 2022, the frequency of developers switching jobs has slightly decreased. Data shows that less than 30% of people have job-hopped within 1-2 years.
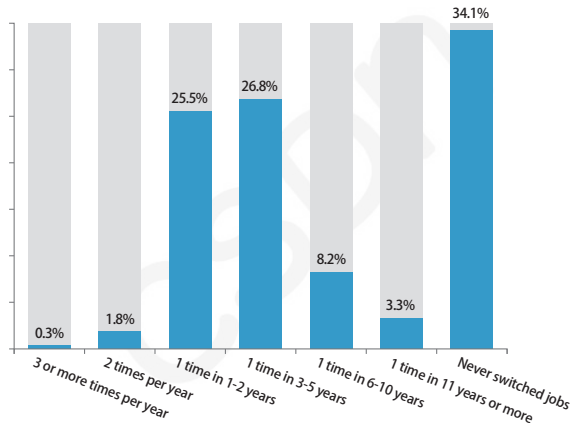
Figure 13 Distribution of job switching frequency of developers

From the data, it can be learned that over 30% of developers only need to work 40 hours per week, and 73% of developers do not work overtime or only work a small amount of overtime.
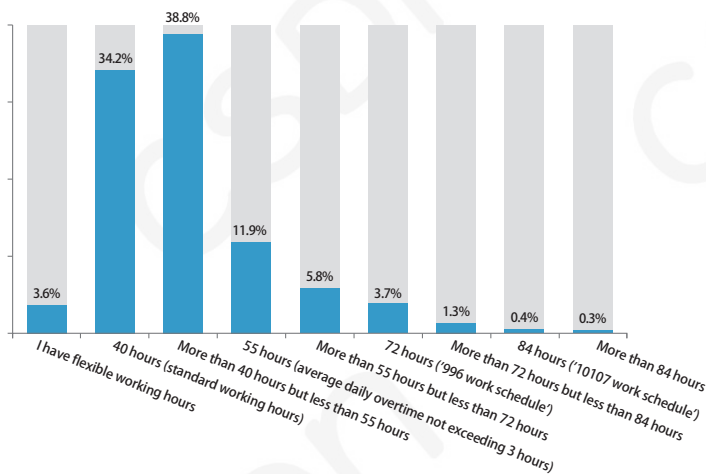
Figure 14 Developers' working hours

For developers, the longer they work, the higher their dissatisfaction level becomes. The dissatisfaction level is the lowest, at only 4%, for those who work 40 hours per week (standard working hours).
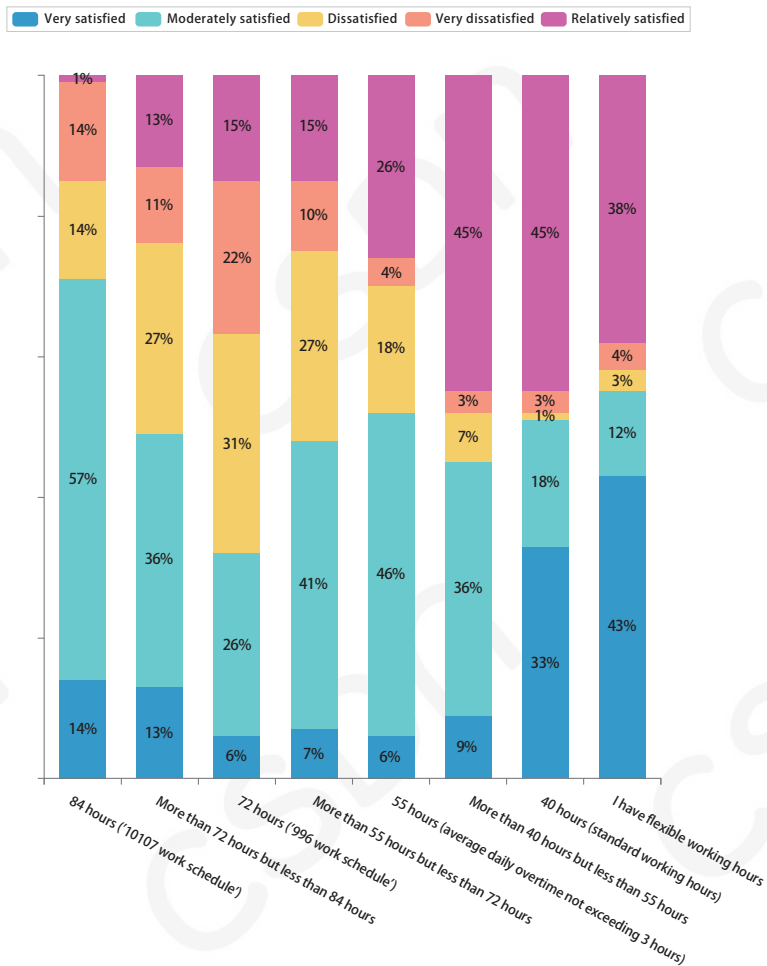
Figure 15 Satisfaction of the developers with working hours

"Big-Week, Small-Week" can take up a developer's personal weekend rest time, although the company would compensate for the extra working hours. Data shows that 56% of developers prefer not to have "Big-Week, Small-Week", while 23% of developers are willing to work under this arrangement in exchange for a higher salary.
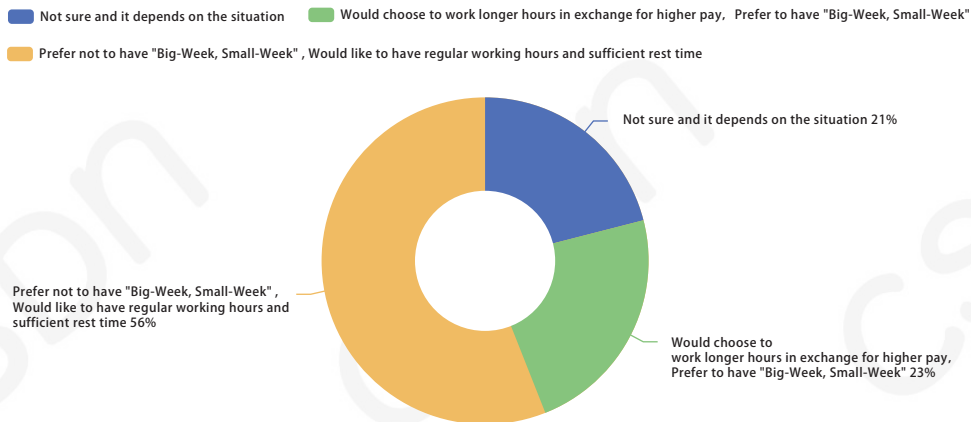
Figure 16 Developer's attitudes towards "Big-Week, Small-Week"

For the developer community, Tier-1 cities and emerging Tier-1 cities offer more job opportunities and higher salaries. Survey results show that 70% of developers prefer to work in Tier-1 cities and emerging Tier-1 cities.
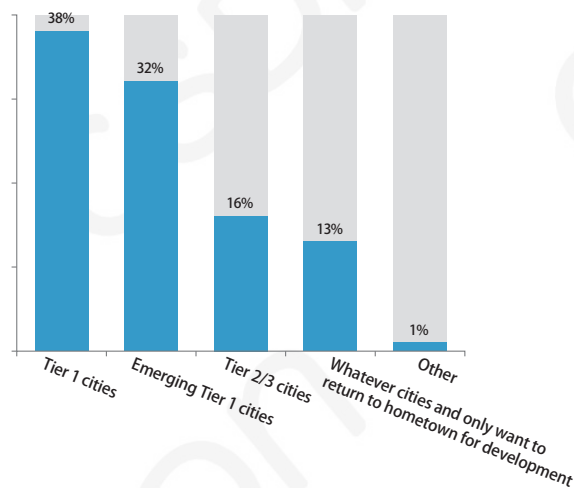
Figure 17 Cities that developers tend to work in

In the past two years, remote work has also been a product of the times amid the pandemic. Data shows that in 2022, 13% of developers reported never working remotely, slightly up from 8% in 2021.
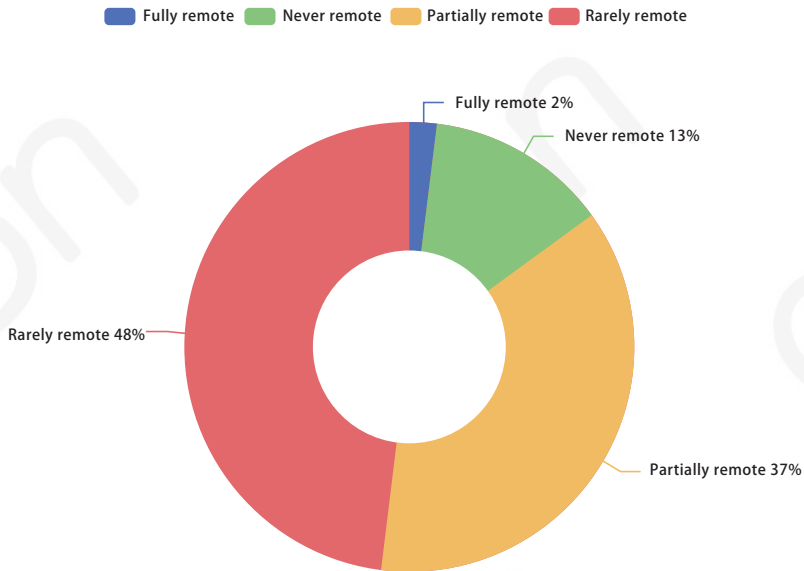

Figure 18 Frequency of remote work

IV. Analysis of Developer Work Status

Various interruptions can affect work efficiency in the workplace. Data shows that 42.7% of developers believe that frequent meetings seriously affect work efficiency, indicating that more and more developers detest frequent meetings.
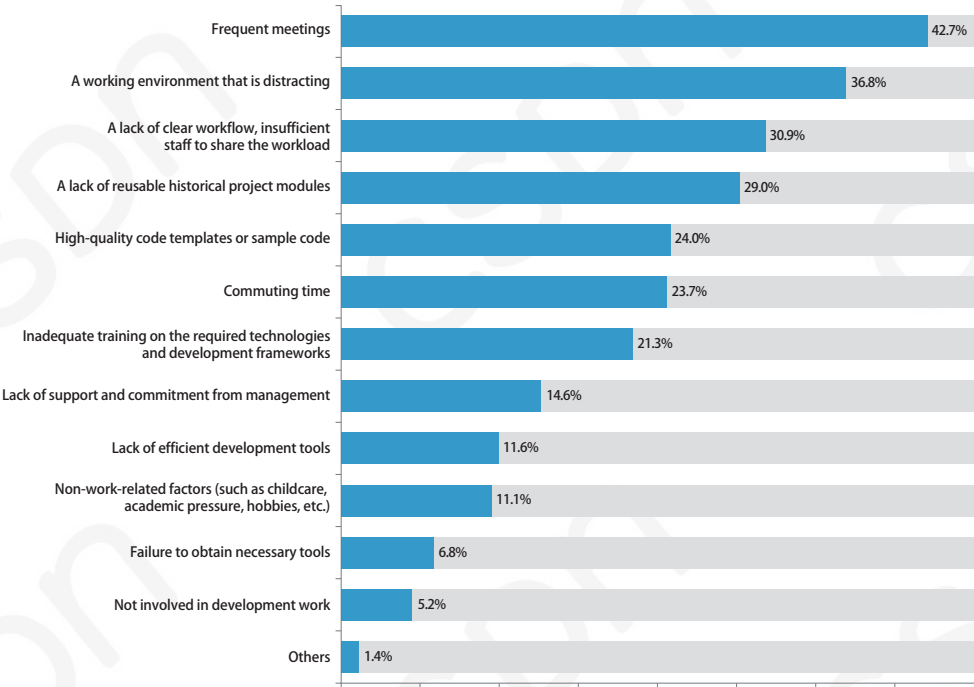
Figure 19 Ranking of factors affecting working efficiency (multiple choices)

In daily work, less than 9% of developers spend more than 70% of their time writing code. Those who spend more than half of their time writing code account for less than 30%.

Time Range	Percentage
0%~10%	14.0%
10%~20%	14.1%
20%~30%	18.4%
30%~40%	16.0%
40%~50%	12.3%
50%~60%	9.0%
60%~70%	7.2%
More than 70%	9.0%
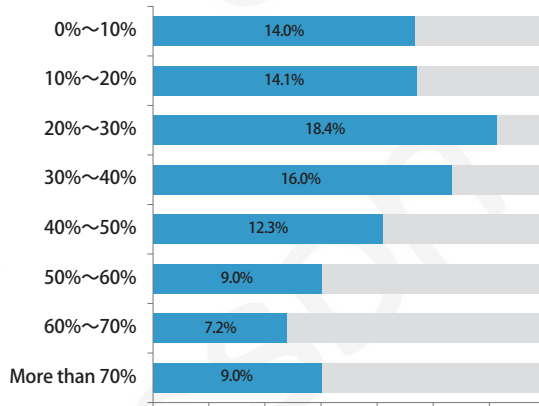
Figure 20 Time developers spend on writing codes each day

Lines of code are a reflection of the workload of developers. Data shows that the vast majority of developers write no more than 300 lines of effective code per day.

Lines	Percentage
More than 1001 lines	5.1%
501-1000 lines	7.5%
301-500 lines	11.9%
201-300 lines	15.3%
101-200 lines	20.2%
51-100 lines	19.4%
1-50 lines	13.3%
Do not write codes	7.3%
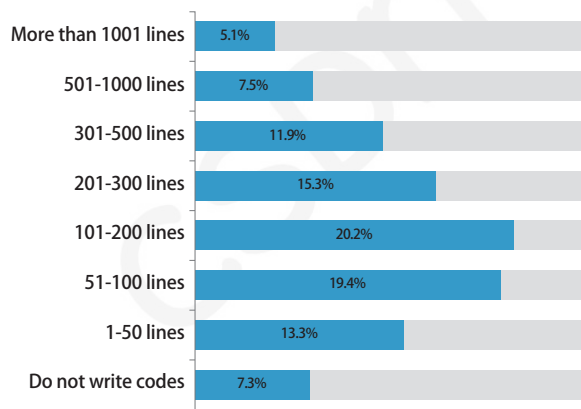
Figure 21 Lines of codes developers write each day

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With the continuous iteration and update of new technologies, programmers also need to continuously learn. 35% of developers say they will continue to work in technical positions until retirement. When their development skills reach a certain level, 49.9% of developers say they want to become managers, while only 9.6% of developers do not want to become managers.
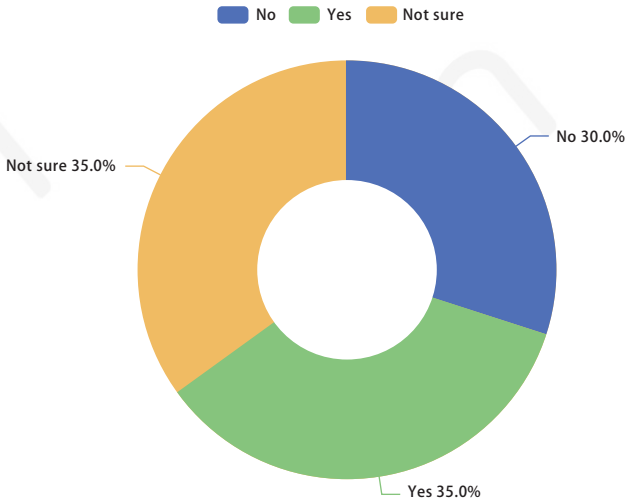
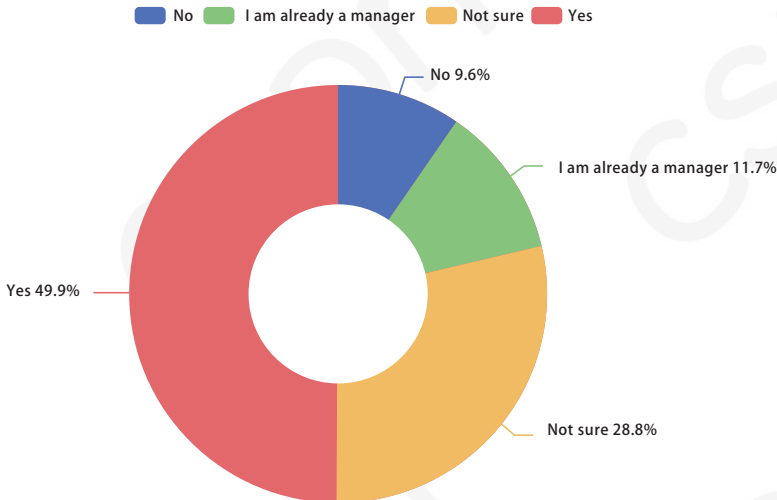Figure 22 Do the developers want to continue to work in the technical positions until retirement

Figure 23 Does the developer want to be a manager

In the developer community, new technologies are updated and iterated very quickly. To improve their skills, one must keep up with the pace of the times. Data shows that 61% of developers say they want to improve their careers by learning hot technologies.
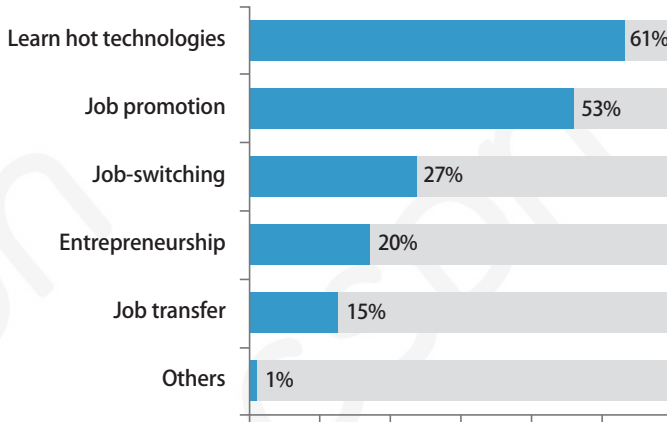

Figure 24 Ways the developers boost their career (multiple choices)

V. Characteristics of Software Development Tools Usage

According to survey data, in the field of programming languages, the percentage of developers using the Java language in 2022 is 42%. With the advances in artificial intelligence, the usage of Python is gradually increasing, and the percentage of developers who frequently use Python in their work is 31.2%.
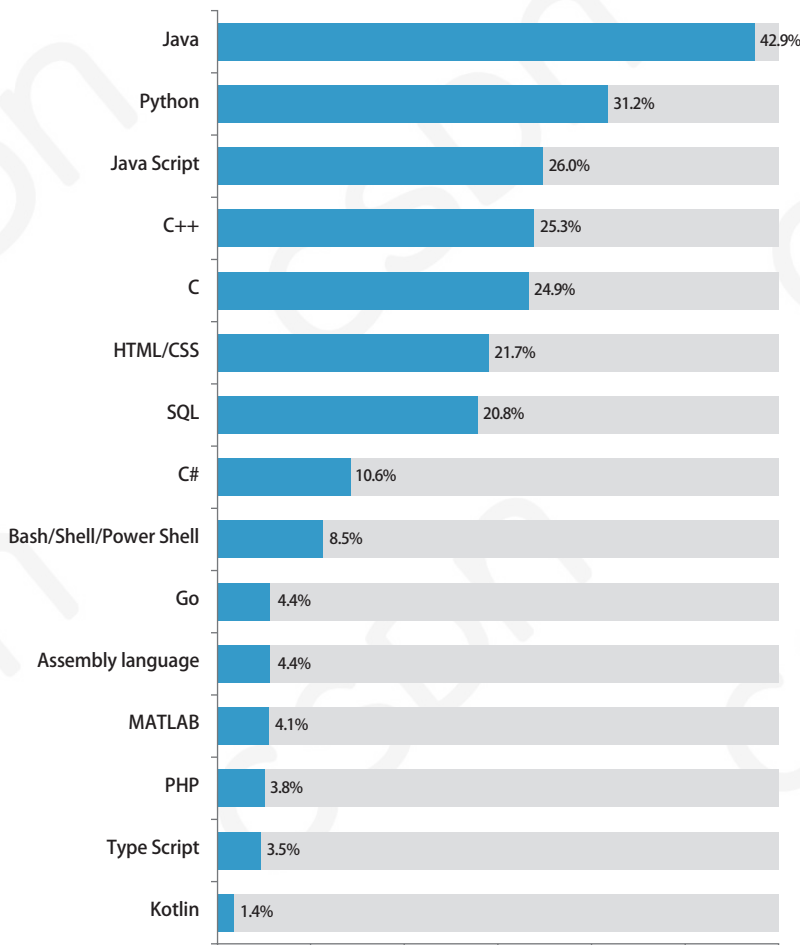
Language	Percentage
Java	42.9%
Python	31.2%
Java Script	26.0%
C++	25.3%
C	24.9%
HTML/CSS	21.7%
SQL	20.8%
C#	10.6%
Bash/Shell/Power Shell	8.5%
Go	4.4%
Assembly language	4.4%
MATLAB	4.1%
PHP	3.8%
Type Script	3.5%
Kotlin	1.4%

Figure 25 Ranking of usage of programming languages (multiple choices)

Assembly language, a low-level language, is the language that developers least like to deal with, accounting for 38% of the total. Due to their difficulty in use, some developers also find C and C++ daunting.
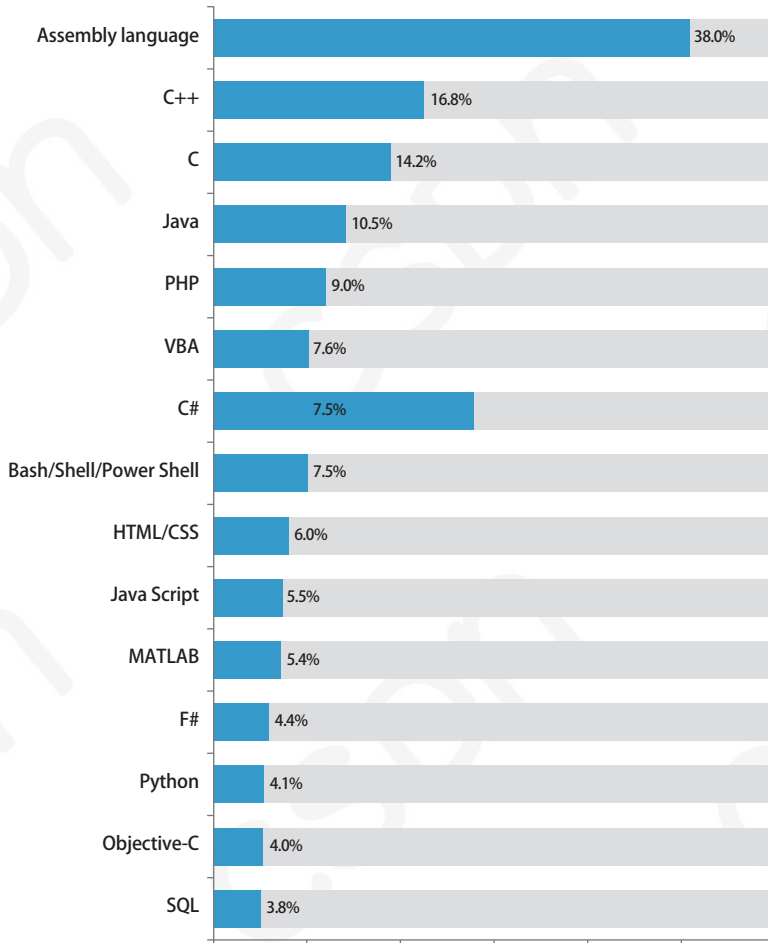

Figure 26 Ranking of languages most disliked by the developers (multiple choices)

A good programming language can not only improve development efficiency, but also make the coding process enjoyable. 25.3% of developers said that they would like to switch to Python if given the chance, indicating that Python is still very popular among developers.

Language	Percentage
No plan to use new languages	32.4%
Python	25.3%
Java	18.4%
C++	16.6%
Go	16.3%
C	8.9%
Java Script	8.6%
C#	5.6%
SQL	5.2%
HTML/CSS	4.6%
Assembly language	3.9%
PHP	3.5%
Rust	3.2%
Type Script	3.1%
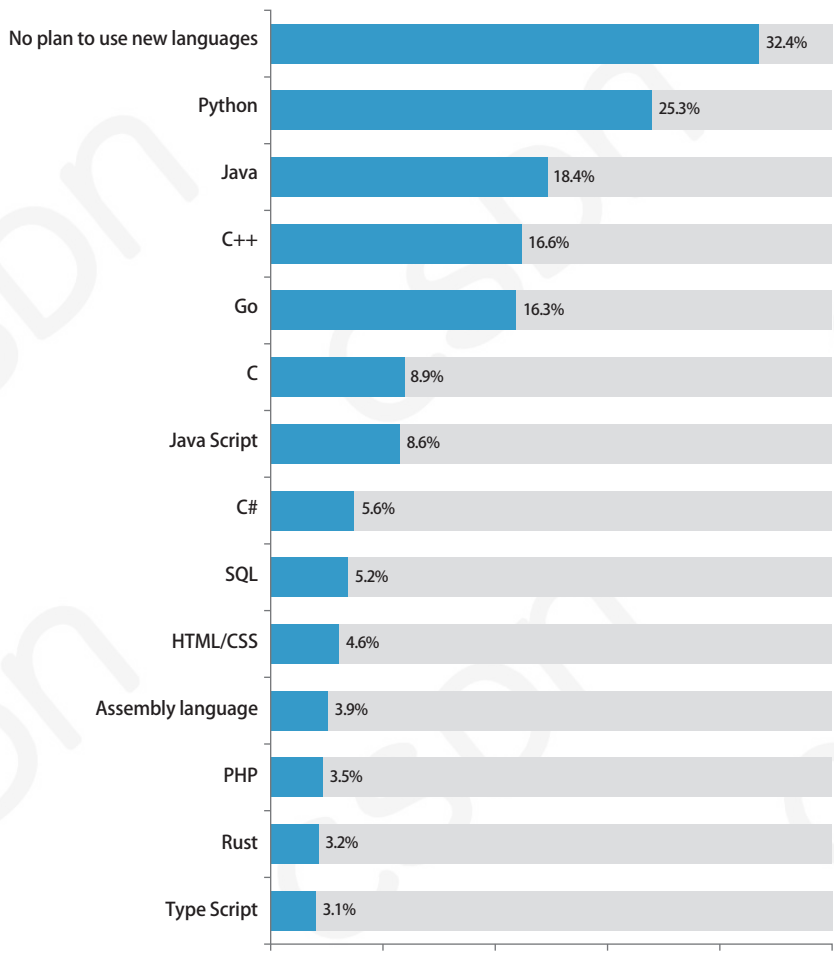
Figure 27 Ranking of languages developers want to use (multiple choices)

In recent years, Vue.js has become increasingly popular in web development, with 36.1% of developers using it extensively. In contrast, the usage of jQuery has been declining year by year, dropping from 29.1% last year to 23.3%.
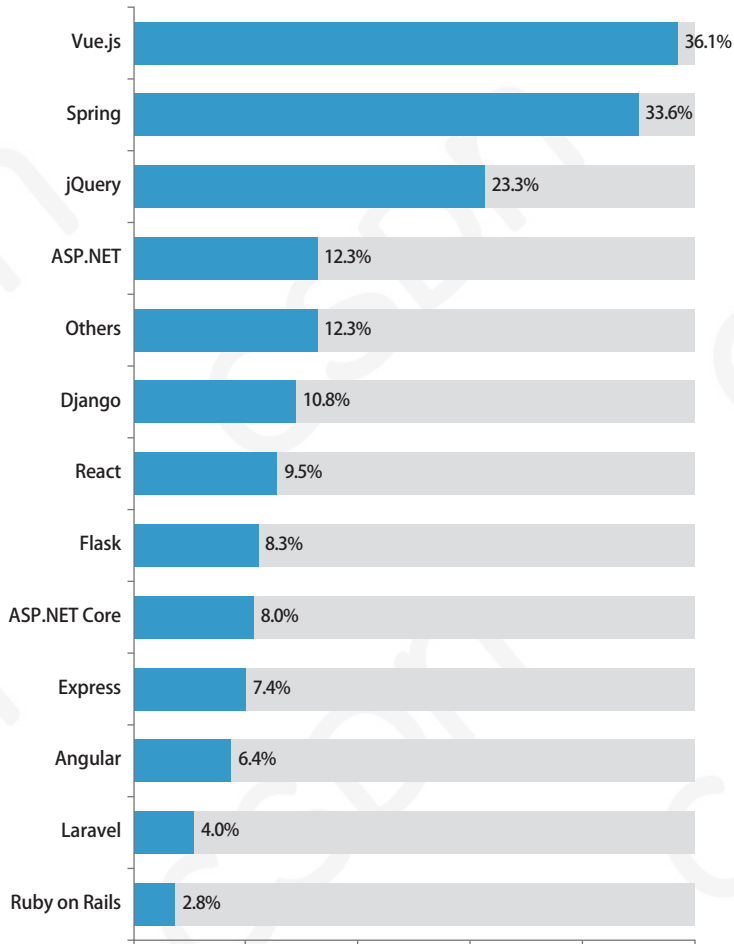
Figure 28 Ranking of usage of Web frameworks (multiple choices)

In recent years, the cross-platform tool Flutter has rapidly expanded and has been heavily promoted by major domestic developers. 6.8% of developers frequently use Flutter in their work, ranking it in the top 10 and surpassing React Native in usage.
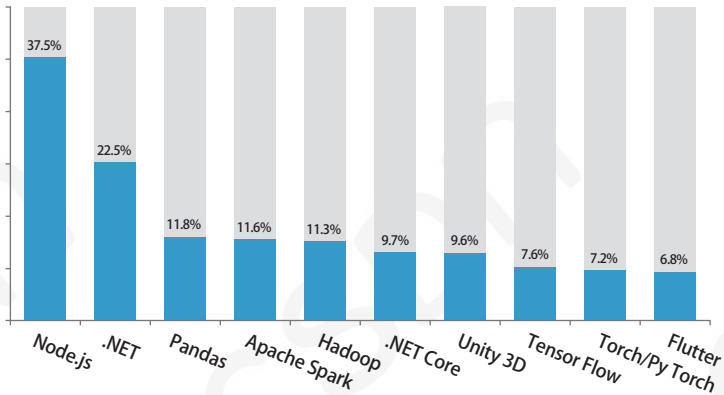
Figure 29 Ranking of usage of technical frameworks (multiple choices)

Development tools remained similar to last year, with no significant changes in overall rankings. Visual Studio Code, a lightweight cross-platform tool, is used by 38% of developers in their daily work, ranking first.
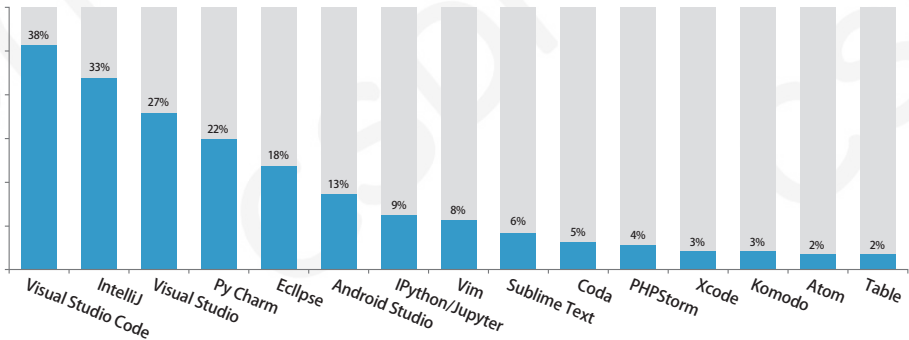
Figure 30 Ranking of usage of development environments(multiple choices)

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In addition to local IDE tools, there are now more and more cloud IDEs available for developers to use. 49% of surveyed developers stated that they use cloud IDEs in their work, with 44% of them having used GitHub Codespaces.
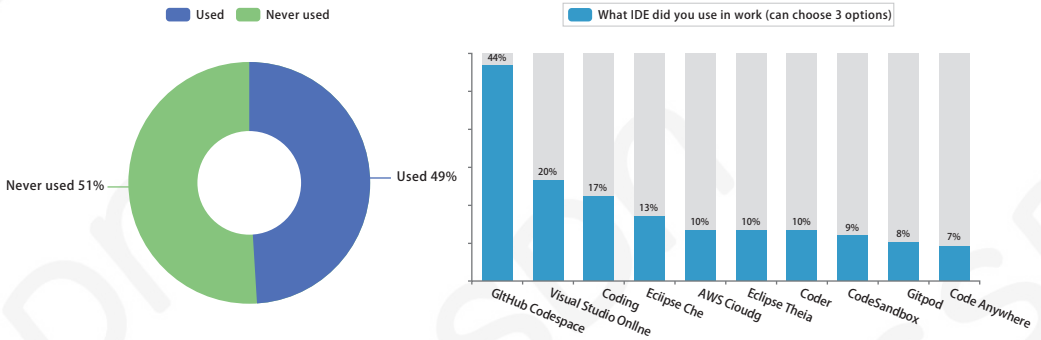
Figure 31 Ranking of usage of cloud IDE (multiple choices)

Cost reduction and efficiency improvement have been the main theme in the past two years, and low-code platforms are also tools for improving productization capabilities. 42% of developers reported using low-code development platforms in the past year, representing a significant increase compared to 31% in 2021. Among the corresponding low-code platforms, 24% of developers have used the Alibaba Cloud platform Yida.
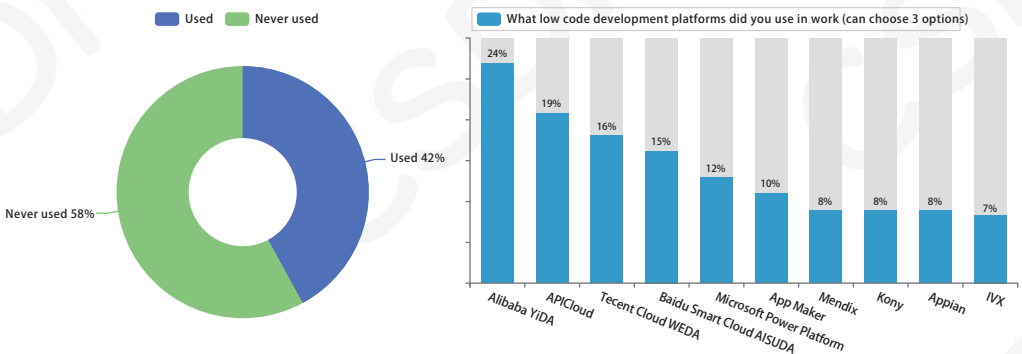
Figure 32 Ranking of usage of low code platforms

The development of large AI models has led to the emergence of more and more AI tools that can improve the efficiency of developers. 45% of developers have reported using AI programming-related tools, with 34% of them stating that they have used ChatGPT.
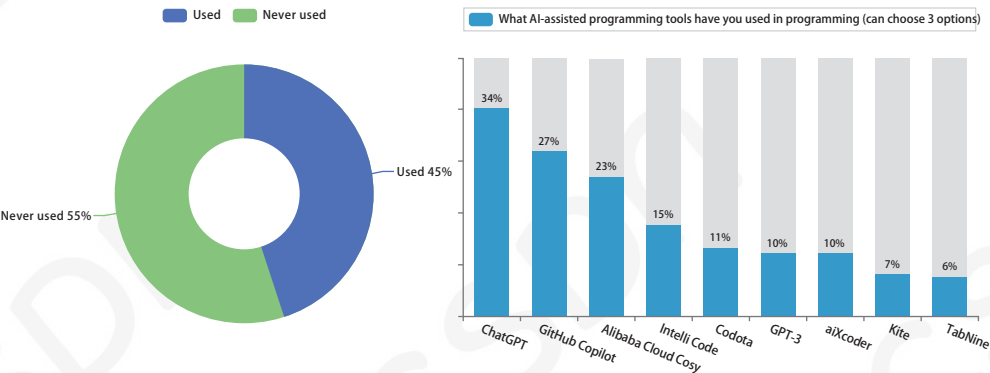

Figure 33 Ranking of usage of AI-assisted programming tools

Since AI can assist in programming, there have been ongoing discussions about whether it can replace developers. 61% of developers believe that current AI programming cannot replace developers. Of course, there is also a small group of developers who believe that AI programming has the potential to replace existing developers.
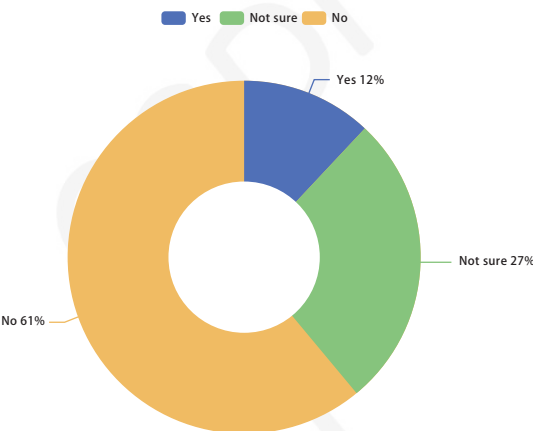
Figure 34 Will AI-assisted programming tools replace the developers

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Collaboration is the most important part of developers' work. Data shows that 62% of developers use Github as a tool for managing collaborative development. The next most popular tool is GitLab, accounting for 30%.
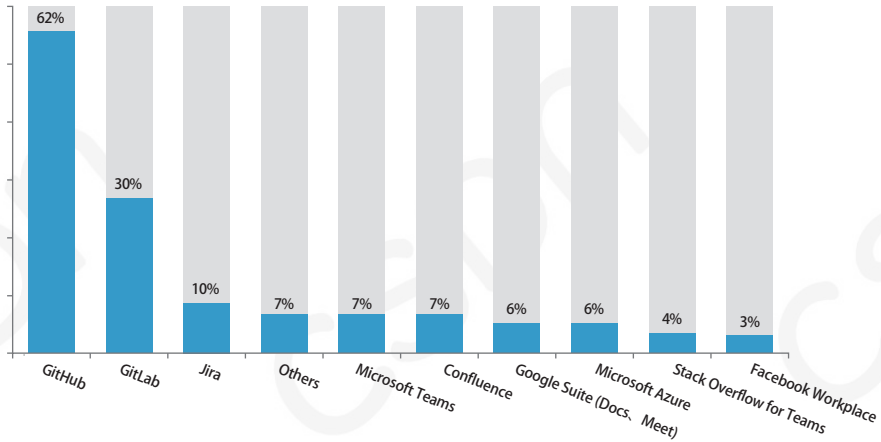

Figure 35 R&D collaboration tools management

VI. Analysis of Learning Characteristics of Developers

Learning is an important trait for many developers, and taking online courses is an important path for developers to continue learning. When faced with new knowledge, 54% of developers prefer to learn through online courses. In addition, 43% of developers will learn new programming languages, frameworks, or tools through self-study.
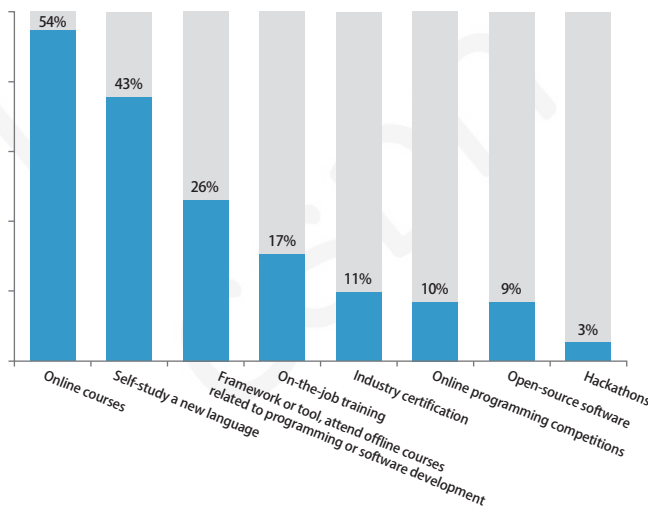

Figure 36 Ranking of continuous learning paths of developers (multiple choices)

Many developers consider their leisure time outside of work as an important period to improve their skills. Only 4% of respondents said they did not have time to recharge and learn, while 44% of respondents said they spend 1-5 hours a week learning
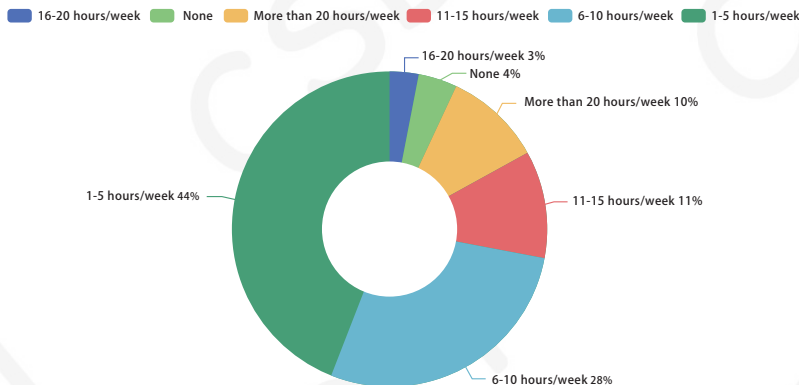

Figure 37 Time developers spend on learning per week

Keeping up with cutting-edge technologies is also an important way to broaden the horizons of developers and better plan their future career paths. However, data shows that 20% of developers pay little attention to the development of cutting-edge technologies.
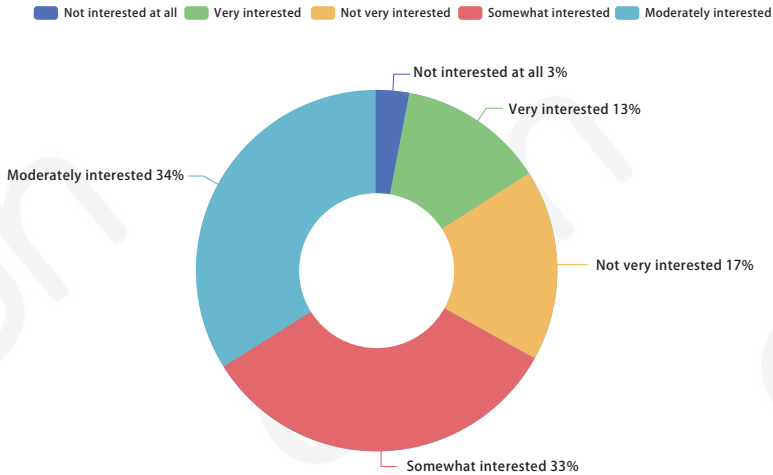

Figure 38 Interest of developers in the cutting-edge technologies
of the industry (for instance, metaverse, Web3, etc)

Solving problems encountered in work is a necessary skill for developers. As the largest Chinese community for programmers, CSDN has a lot of resources to help developers solve problems. 64% of respondents indicated that they would search for answers on CSDN when encountering problems.
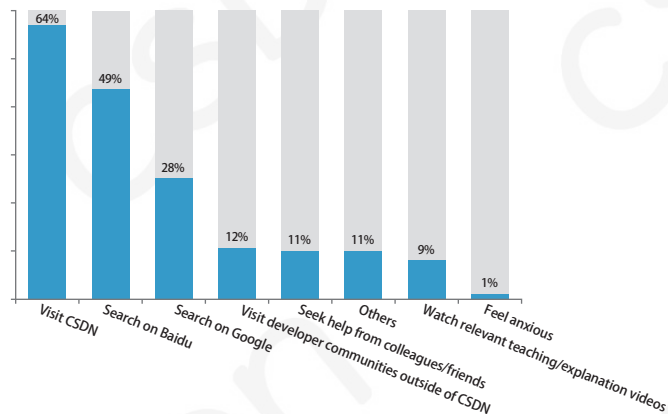

Figure 39 Developers' ways of dealing with problems when they encounter them

An excellent developer should have a strong ability to self-learn. 48% of developers recognize programmers who have strong self-learning abilities, followed by developers who have independent open-source projects.
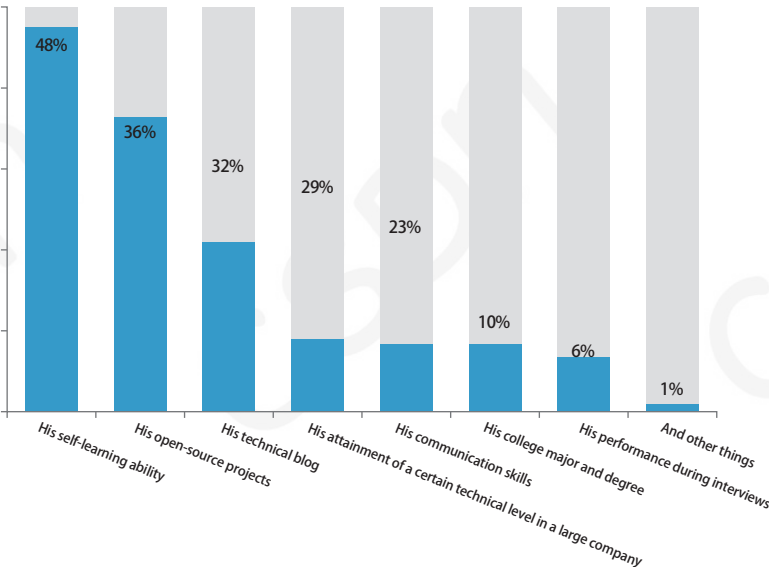

Figure 40 Bonus points used by developers when assessing other programmers (multiple choices)